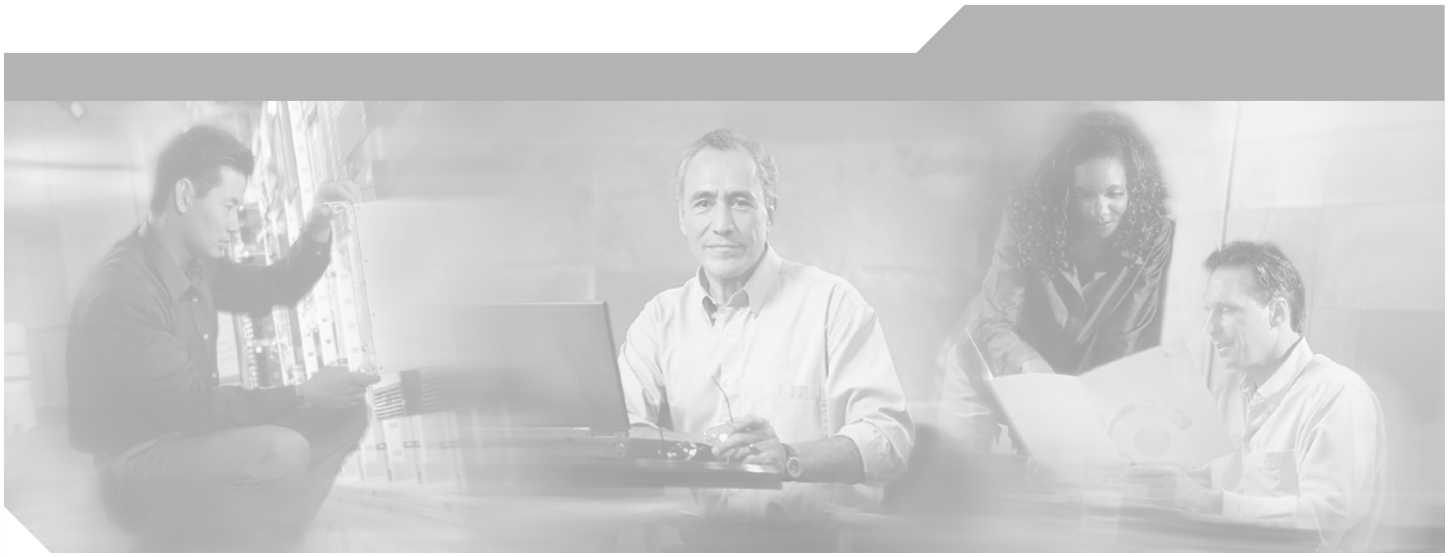

Catalyst 2940 Switch Hardware Installation Guide

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The following information is for FCC compliance of Class B devices: The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with Cisco's installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

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You can determine whether your equipment is causing interference by turning it off. If the interference stops, it was probably caused by the Cisco equipment or one of its peripheral devices. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

• Turn the television or radio antenna until the interference stops.

• Move the equipment to one side or the other of the television or radio.

• Move the equipment farther away from the television or radio.

• Plug the equipment into an outlet that is on a different circuit from the television or radio. (That is, make certain the equipment and the television or radio are on circuits controlled by different circuit breakers or fuses.)

Modifications to this product not authorized by Cisco Systems, Inc. could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

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Catalyst 2940 Switch Hardware Installation Guide

Preface

Audience

This guide is for the networking or computer technician responsible for installing a Catalyst 2940 switch, hereafter referred to as the *switch*. We assume that you are familiar with the concepts and terminology of Ethernet and local area networking.

Purpose

This guide describes the hardware features of Catalyst 2940 switch. It describes the physical and performance characteristics of the switch, explains how to install a switch, and provides troubleshooting information.

This guide does not describe how to configure software features on your switch or describe the Catalyst 2940-specific system messages that you might encounter. It also does not provide information about command-line interface (CLI) commands that have been created or changed for use by the switch. For more information, see the switch software configuration guide, the switch system message guide, and the switch command reference.

Conventions

Notes, cautions, and warnings use these conventions and symbols:

Note Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.

Caution Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Warning **IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing **BELANGRIJKE VEILIGHEIDSINSTRUCTIES**

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus **TÄRKEITÄ TURVALLISUUSOHJEITA**

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET

Attention **IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS

Warnung **WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.

Avvertenza **IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI

Advarsel **VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES

¡Advertencia! **INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES

Varning! **VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR

Figyelem **FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmezeto jel veszélyre utal. Sérülésveszélyt rejto helyzetben van. Mielott bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplo figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján keresheto meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!

Предупреждение **ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

警告 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의 중요 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

이 지시 사항을 보관하십시오.

Aviso **INSTRUÇÕES IMPORTANTES DE SEGURANÇA**

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES

Advarsel **VIGTIGE SIKKERHEDSANVISNINGER**

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemesbeskadigelse. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER

تحذير **إرشادات الأمان الهامة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في أخر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز.
قم بحفظ هذه الإرشادات

Upozorenje **VAŽNE SIGURNOSNE NAPOMENE**

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE

Upozornění **DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY**

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

USCHOVEJTE TYTO POKYNY

Προειδοποίηση ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθεις πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ

אזהרה **הוראות בטיחות חשובות**

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כד לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

שמור הוראות אלה

Opomena ВАЖНИ БЕЗБЕДНОСНИ НАПАТСТВИЈА

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во преведените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОВИЕ НАПАТСТВИЈА

Ostrzeżenie **WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA**

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ

Upozornenie **DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY**

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD

Related Publications

These documents provide complete information about the switch and are available from this URL:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat2940/index.htm

You can order printed copies of documents with a DOC-xxxxxx= number from the Cisco.com sites and from the telephone numbers listed in the "Ordering Documentation" section on page xiv.

- *Release Notes for the Catalyst 2940 Switch* (not orderable but available on Cisco.com)

Note Switch requirements and procedures for initial configurations and software upgrades tend to change and therefore appear only in the release notes. Before installing, configuring, or upgrading the switch, see the release notes on Cisco.com for the latest information.

For hardware information about the switch, see these documents:

- *Catalyst 2940 Switch Hardware Installation Guide* (not orderable but available on Cisco.com)
- *Catalyst 2940 Switch Getting Started Guide* (order number DOC-7816576=)
- *Regulatory Compliance and Safety Information for the Catalyst 2940 Switch* (order number DOC-7816656=)

For software information for the Catalyst 2940 switches, see these documents:

- *Catalyst 2940 Switch Software Configuration Guide* (order number DOC-7815507=)
- *Catalyst 2940 Switch Command Reference* (order number DOC-785505=)
- *Catalyst 2940 Switch System Message Guide* (order number DOC-7815504=)
- *Release Notes for the Catalyst 2940 Switch* (not orderable but is available on Cisco.com)
- *Installation Notes for the Catalyst 2940 Switch Cable Guard* (order number DOC-7815689=)
- Device manager online help (available on the switch)
- *Getting Started with Cisco Network Assistant* (not orderable but available on Cisco.com)

For information about small form-factor (SFP) modules, see these documents:

- Cisco *Small Form-Factor Pluggable Modules Installation Notes* (order number DOC-7815160=)
- *Compatibility Matrix for the Small Form-Factor Pluggable Modules* (not orderable but is available on Cisco.com)

Obtaining Documentation

Cisco provides several ways to obtain documentation, technical assistance, and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which may have shipped with your product. The Documentation CD-ROM is updated regularly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual or quarterly subscription.

Registered Cisco.com users can order a single Documentation CD-ROM (product number DOC-CONDOCCD=) through the Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/ordering_place_order_ordering_tool_launch.html

All users can order annual or quarterly subscriptions through the online Subscription Store:

http://www.cisco.com/go/subscription

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/en/US/partner/ordering/index.shtml

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

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You can send your comments in e-mail to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance.

Cisco TAC Website

The Cisco TAC website (http://www.cisco.com/tac) provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year.

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

http://tools.cisco.com/RPF/register/register.do

Opening a TAC Case

The online TAC Case Open Tool (http://www.cisco.com/tac/caseopen) is the fastest way to open P3 and P4 cases. (Your network is minimally impaired or you require product information). After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using these recommendations, your case will be assigned to a Cisco TAC engineer.

For P1 or P2 cases (your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is "down" or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:

  http://www.cisco.com/en/US/products/products_catalog_links_launch.html

- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: Internetworking Terms and Acronyms Dictionary, Internetworking Technology Handbook, Internetworking Troubleshooting Guide, and the Internetworking Design Guide. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

  http://www.ciscopress.com

- Packet magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/go/packet

- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

  http://www.cisco.com/en/US/learning/index.html

Overview

This chapter provides information about these topics:

Setting up the Switch

See the *Catalyst 2940 Switch Getting Started Guide* for instructions on initially configuring your Catalyst switch by using the Express Setup. Also covered in the getting started guide are switch management options, basic rack-mounting procedures, port and module connections, power connection procedures, and troubleshooting help. For instructions on setting up your switch by using the command-line interface (CLI), see Appendix C, "Configuring the Switch with the CLI-Based Setup Program."

Features

The Catalyst 2940 switches are a family of Ethernet switches that you can use to connect workstations and other network devices, such as servers, routers, and other switches. All models of the switch are cluster-capable.

See the switch software configuration guide for examples that show how you might deploy the switches in your network.

These are the switch features:

- Hardware
  - Catalyst 2940-8TT-S switch—Eight 10/100 Ethernet ports and one Gigabit Ethernet 10/100/1000 port.
  - Catalyst 2940-8TF-S switch—Eight 10/100 Ethernet ports, one 100BASE-FX port, and one small-form-factor pluggable (SFP) module slot. The Cisco SFP modules that are supported by this switch include the1000BASE-LX, 1000BASE-SX, Coarse Wavelength Division Multiplexing (CDWM) fiber-optic modules, and the 1000BASE-T copper module.

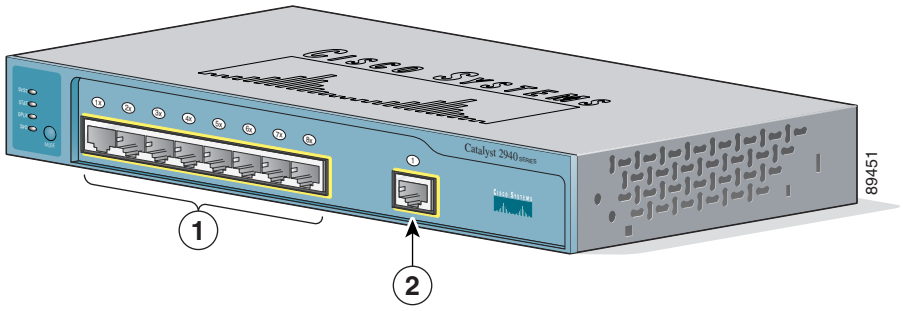
- Configuration
  - Supports manual and autoconfiguration for 10/100 ports
  - Supports manual configuration at 10 or 100 Mbps for 10/100/1000 port (full duplex only at 1000 Mbps)
  - Supports only 100 Mbps and full duplex for 100BASE-FX port
  - Supports 8192 MAC addresses
  - Checks for errors on a received packet, determines the destination port, stores the packet in shared memory, and then forwards the packet to the destination port

Front-Panel Description

The switch front panel contains the ports, the LEDs, and the Mode button.

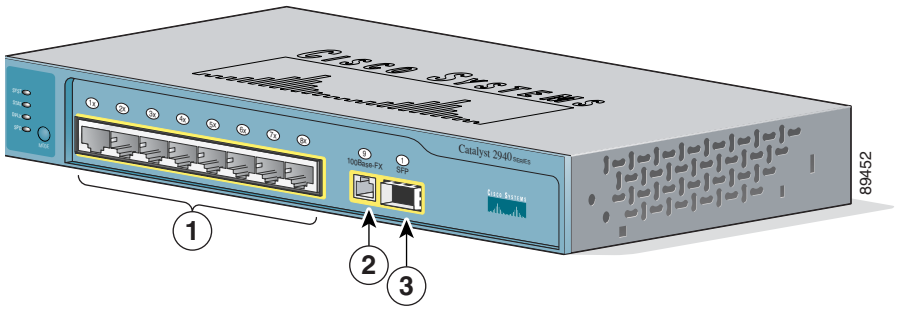
Figure 1-1 and Figure 1-2 show the switches.

Figure 1-1 Catalyst 2940-8TT-S Switch



1	10/100 Ethernet ports
2	10/100/1000 Gigabit Ethernet port

Figure 1-2 Catalyst 2940-8TF-S Switch



1	10/100 Ethernet ports
2	100BASE-FX port
3	SFP module slot

Port Numbering

Table 1-1 lists the port and slot numbering for the Catalyst 2940 switches.

Table 1-1 Port and Slot Numbering

Port or Slot type	Catalyst 2940-8TT-S	Catalyst 2940-8TF-S
10/100 Ethernet	1 through 8	1 through 8
Gigabit Ethernet 10/100/1000	1	—
100BASE-FX	—	9
SFP module	—	1

10/100 Ports

The 10/100 ports use RJ-45 connectors and twisted-pair cabling. The ports can connect to these devices:

- 10BASE-T devices, such as workstations and hubs, through standard RJ-45 connectors and two twisted-pair cabling. You can use Category 3, 4, or 5 cabling.
- 100BASE-TX devices, such as high-speed workstations, servers, hubs, routers, and other switches, through standard RJ-45 connectors and two or four twisted-pair, Category 5 cabling.

Note When connecting the switch to workstations, servers, and routers, be sure that the cable is a twisted-pair straight-through cable. When connecting the switch to hubs or other switches, use a twisted-pair crossover cable. Pinouts for the cables are described in Appendix B, "Connectors and Cables."

The 10/100 ports can be explicitly set to operate in any combination of half duplex, full duplex, 10 Mbps, or 100 Mbps. They can also be set for speed and duplex autonegotiation, compliant with IEEE 802.3U. In all cases, the cable length from a switch to an attached device cannot exceed 328 feet (100 meters).

When set for autonegotiation, a port senses the speed and duplex settings of the attached device and advertises its own capabilities. If the attached device supports autonegotiation, the port negotiates the best connection (that is, the fastest line speed that both devices support and full-duplex transmission, if the attached device supports it) and configures itself accordingly.

10/100/1000 Port

The 10/100/1000 port on the Catalyst 2940-8TT-S switch uses RJ-45 connectors and twisted-pair cabling. The port can connect to these devices:

- 10BASE-T devices, such as workstations and hubs, through standard RJ-45 connectors and two or four twisted-pair, Category 5 cabling.
- 100BASE-TX devices, such as high-speed workstations, servers, hubs, routers, and other switches, through standard RJ-45 connectors and two or four twisted-pair, Category 5 cabling.
- 1000BASE-T devices, such as high-speed workstations, servers, hubs, routers, and other switches, through standard RJ-45 connectors and four twisted-pair, Category 5 cabling.

Note When connecting the switch to a 1000BASE-T device, be sure to use a four twisted-pair, Category 5 cable.

Note When connecting the switch to workstations, servers, and routers, be sure to use a twisted-pair straight-through cable. When connecting the switch to hubs or other switches, use a twisted-pair crossover cable. Pinouts for the cables are described in Appendix B, "Connectors and Cables."

The 10/100/1000 port on the Catalyst 2940-8TT-S switch can be explicitly set to operate at full- or half-duplex at 10 or 100 Mbps. The port is restricted to full-duplex mode when it is set at 1000 Mbps.

The port can also be set for speed autonegotiation, compliant with IEEE 802.3AB. In all cases, the cable length from a switch to an attached device cannot exceed 328 feet (100 meters).

100BASE-FX Port

The 100BASE-FX port on the Catalyst 2940-8TF-S switch can use either 50/125- or 62.5/125-micron multimode fiber-optic cabling. The 100BASE-FX port operates only at 100 Mbps in full-duplex mode.

In full-duplex mode, the cable length from the 100BASE-FX port to an attached device cannot exceed 6562 feet (2 kilometers).

You can use only the 100BASE-FX port or the SFP module slot at one time. When the switch is first powered on, the 100BASE-FX port is enabled by default. However, if an SFP module is already installed in the switch, the SFP module slot is enabled.

You can connect the 100BASE-FX port to an SC port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table 1-2. Use the Cisco part numbers in Table 1-2 to order the patch cables that you need.

Table 1-2 MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M=
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M=
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M=

SFP Module Slot

The SFP module slot supports copper or fiber-optic SFP modules. The SFP module slot is numbered as port 1.

Note You can use only the SFP module slot or the 100BASE-FX port at one time. When the switch is first powered on, the 100BASE-FX port is enabled by default. However, if an SFP module is already installed in the switch, the SFP module slot is enabled.

If you install an SFP module after the switch has powered on, you must reload the switch to enable the SFP module.

SFP Modules

The Catalyst 2940-8TF-S switch uses a field-replaceable SFP module to establish Gigabit connections. You insert an SFP module into the SFP module slot on the front of the switch.

The Cisco SFP modules that are supported by the Catalyst 2940-8TF-S switch include:

- 1000BASE-LX, fiber-optic
- 1000BASE-SX, fiber-optic
- 1000BASE-T, copper
- Coarse Wavelength-Division Multiplexing (CDWM), fiber-optic

Note The Catalyst 2940-8TF-S switch only supports 1000 Mbps and full-duplex modes on SFP modules.

The 1000BASE-LX and 1000BASE-SX SFP modules are used to establish fiber-optic connections. You use fiber-optic cables with LC connectors to connect to an SFP module. The SFP modules support 850 to 1550 nm nominal wavelengths. These field-replaceable modules provide the uplink optical interfaces, laser send (TX), and laser receive (RX).

The restrictions are that each port must match the wave-length specifications on the other end of the cable, and the cable must not exceed the stipulated cable length for reliable communications. Table 1-3 lists these stipulations.

Table 1-3 Cabling Stipulations for Fiber-Optic SFP Modules

SFP Module	62.5/125 micron Multimode 850 nm[1] Fiber	50/125 micron Multimode 850 nm Fiber	62.5/125 micron Multimode 1310 nm Fiber	50/125 micron Multimode 1310 nm Fiber	9/125 micron Single-mode 1310 nm Fiber	8 micron Single-mode Dispersion Shifted Fiber
SX	275 m[2] at 200 Mhz-km	550 m at 500 Mhz-km				—
LX	—	—	550 m at 500 Mhz-km	550 m at 400 Mhz-km	10 km	—
CWDM[3]	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610	SMF	9/125	—	62 miles (100 km)	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610

1. nm = nanometer
2. m = meter
3. CWDM = Coarse Wavelength-Division Multiplexing

The 1000BASE-T SFP module is used to establish a Gigabit Ethernet connection through a Category 5 (copper) cable. This module can provide a Gigabit Ethernet connection of up to 100 meters through a Category 5 cable.

Use only Cisco SFP modules on the Catalyst 2940-8TF-S switch. Each SFP module has an internal serial EEPROM that is encoded with security information. This encoding provides a way for Cisco to identify and validate that the SFP module meets the requirements for the switch.

The Cisco CWDM SFPs operate on single-mode fiber. The SFPs support both Gigabit Ethernet as well as fiber channel (1 Gigabit and 2 Gigabit) links. For more information about Cisco CWDM SFPs, see the Cisco CWDM SFP Compatibility Matrix at this URL:
http://www.cisco.com/issg/tmg/cwdm.shtml#matrix

Also see your SFP module documentation and the *Cisco Small Form-Factor Pluggable Modules Installation Notes* (not orderable but is available on Cisco.com).

For the latest information about SFP modules supported by the switch, see the release notes.

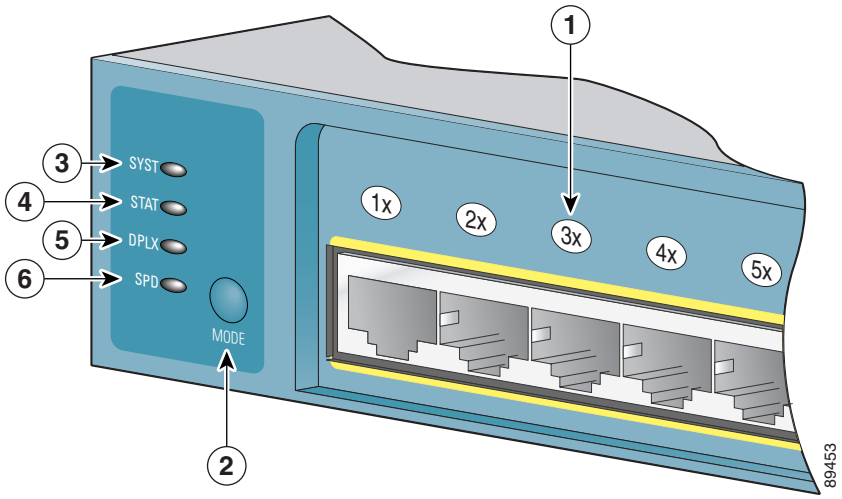
Cable Guard

You can order an optional cable guard to secure cables to the front of the switch and prevent them from being accidentally removed. To order a cable guard, contact your Cisco representative.

LEDs

There are four LEDs on the left panel of the switch, and there are port status LEDs above all the switch ports, as shown in Figure 1-3.

Figure 1-3 LEDs on Catalyst 2940 Switches



1	Port status LED	**4**	STAT LED
2	Mode button	**5**	DPLX LED
3	SYST LED	**6**	SPD LED

You can use these LEDs to monitor switch activity and performance:

- The system (SYST) continually displays the system status. The SYST LED color shows the switch status.
- The status (STAT), duplex (DPLX), and speed (SPD) LEDs show the information that is being displayed by the port status LEDs. Pressing the Mode button cycles the LEDs through the STAT, DPLX, and SPD displays.

All of the LEDs described in this section are visible through the GUI management applications—the Network Assistant application for multiple switches and the device manager for a single switch. The switch software configuration guide describes how to use the CLI to configure and to monitor individual switches and switch clusters.

SYST LED

The SYST LED shows whether the system is receiving power and functioning properly. Table 1-4 lists the LED colors and meanings.

Table 1-4 System LED

Color	System Status
Off	System is not powered on.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

For information about the system LED colors during the power-on self-test (POST), see the "Understanding POST Results" section on page 3-1.

STAT, DPLX, SPD, and Port LEDs

Press the Mode button to cycle through the STAT, DPLX, and SPD LED displays. When the LED is highlighted for the mode that you want, release the button to enable that highlighted mode.

Table 1-5 lists the mode meanings.

Table 1-5 Port Mode LEDs

Mode LED	Port Mode	Description
STAT	Port status	Port status. This is the default mode.
DPLX	Port duplex mode	Port duplex mode: half duplex or full duplex.
SPD	Port speed	Port operating speed: 10 or 100 Mbps for 10/100 ports and 10, 100, or 1000 Mbps for 10/100/1000 ports.

Each port has a port status LED, also called a port LED. These LEDs display information about the individual ports. When you change the port mode, the meanings of the port LED colors change. Table 1-6 explains how to interpret these colors.

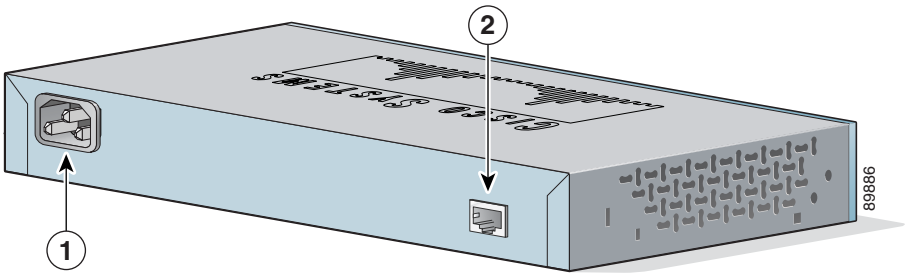
Table 1-6 Meaning of Port LED Colors in Different Modes

Port Mode	Color	Meaning
STAT	Off	No link.
	Solid green	Link present.
	Flashing green	Activity. Port is sending or receiving data.
	Alternating green-amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication.
	Solid amber	Port is not forwarding. Port was disabled by management, an address violation, or Spanning Tree Protocol (STP). **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds while STP checks the switch for possible loops.
DPLX	Off	Port is operating in half duplex.
(half or full duplex)	Green	Port is operating in full duplex.
SPD	10/100 ports	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	10/100/1000 ports	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	Flashing green	Port is operating at 1000 Mbps.
	SFP modules	
	Off	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	Flashing green	Port is operating at 1000 Mbps.

Rear-Panel Description

The rear panel of the switches, as shown in Figure 1-4, have an AC power connector and an RJ-45 console port.

Figure 1-4 Catalyst 2940 Switch Rear Panel



1	AC power connector
2	RJ-45 console port

Power Connector

You provide power to a switch by using the AC internal power supply. The internal AC power supply is an autoranging unit that supports input voltages between 100 and 240 VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet.

The switch accessory kit includes an L-shaped AC power cord. Table 1-7 lists the spare L-shaped AC power cords that you can order from your Cisco sales representative.

Table 1-7 Spare L-Shaped Power Cords

Type	Cisco Part Number
110 V	CAB-AC-RA=
Argentina	CAB-ACR-RA=
Australia, 10 A	CAB-ACA-RA=
China	CAB-ACC-RA=
Europe	CAB-ACE-RA=
Italy	CAB-ACI-RA=
Japan	CAB-JPN-RA=
Switzerland	CAB-ACS-RA=
UK	CAB-ACU-RA=

Console Port

You can connect a switch to a PC through the console port by using a RJ-45-to-DB-9 adapter cable.

If you want to connect a switch to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco.

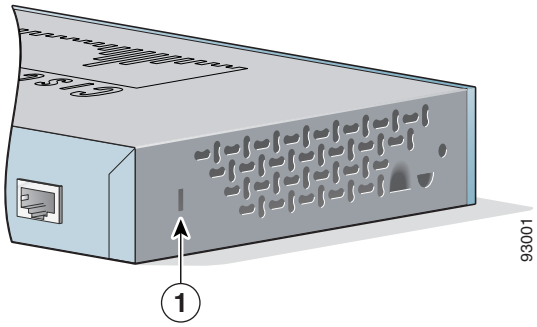
For console-port and adapter-pinout information, see the "Cable and Adapter Specifications" section on page B-5.

Security Slots

The switches have security slots in the left and right side panels. You can install an optional cable lock, such as the type that is used to secure a laptop computer, to secure either or both sides of the switch.

Figure 1-5 shows the slot on a left-side panel.

Figure 1-5 Switch Left Panel



1	Security slot

Cable locks are available from most computer accessory suppliers.

Management Options

Catalyst 2940 switches offer these management options:

- Network Assistant

  The Network Assistant is a GUI-based application that you can install and run on your desktop; you do not need a web browser to run it. You can use Network Assistant to manage and monitor switch clusters or standalone devices. For more information, see the *Getting Started with Cisco Network Assistant* guide and the Network Assistant online help.

- Device manager

  You can use the device manager, which is in the switch memory, to manage individual and standalone switches. The device manager is accessible after you have run the Express Setup program (see the getting started guide for more information about running Express Setup). Use the device manager to perform basic switch configuration and monitoring. You can access the device manager from anywhere in your network through a web browser.

  To launch the device manager, enter the switch IP address in the web browser, and press **Enter**. The device manager page appears.

  See the device manager online help for more information.

- Cisco IOS CLI

  You can manage switches by using command-line entries. To access the CLI, connect a PC or a terminal directly to the console port on the switch. If the switch is attached to your network, you can use a Telnet connection to manage the switch from a remote location. For more information about the CLI, see the switch command reference.

- CiscoView application

  You can use the CiscoView device-management application to set configuration parameters and to view switch status and performance information. This application, which you purchase separately, can be a standalone application or part of an Simple Network Management Protocol (SNMP) network-management platform. For more information, see the documentation that came with your CiscoView application.

- SNMP network management

  You can manage switches by using an SNMP-compatible management station running platforms such as HP OpenView and SunNet Manager. The switch supports a comprehensive set of MIB extensions and MIB II, the IEEE 802.1D bridge MIB, and four Remote Monitoring (RMON) groups. For more information, see the documentation that came with your SNMP application.

Installation

This chapter describes how to install your switch, how to interpret the power-on self-test (POST), and how to connect the switch to other devices. Read these topics, and perform the procedures in this order:

Preparing for Installation

This section provides information about these topics:

Warnings

These warnings are translated into several languages in the *Regulatory Compliance and Safety Information for the Catalyst 2940 Switch.*

Warning **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning **Read the installation instructions before connecting the system to the power source.** Statement 1004

Warning **Do not stack the chassis on any other equipment. If the chassis falls, it can cause severe bodily injury and equipment damage.** Statement 48

Warning **The plug-socket combination must be accessible at all times, because it serves as the main disconnecting device.** Statement 1019

Warning **To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 113°F (45°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.** Statement 17B

Warning **When installing the unit, always make the ground connection first and disconnect it last.** Statement 42

Warning **Installation of the equipment must comply with local and national electrical codes.** Statement 1074

Warning **This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.** Statement 39

Warning **Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.** Statement 43

Warning **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning **Ultimate disposal of this product should be handled according to all national laws and regulations.** Statement 1040

Warning **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

Warning **Class 1 laser product.** Statement 1008

Warning **Avoid direct exposure to the laser beam.** Statement 1012

Installation Guidelines

When determining where to place the switch, observe these guidelines.

- Before installing the switch, first verify that the switch is operational by powering it on and running POST. Follow the procedures in the "Verifying Switch Operation" section on page 2-4.
- For 10/100 ports and the 10/100/1000 port, the cable length from a switch to an attached device cannot exceed 328 feet (100 meters).
- For the 100BASE-FX port, the cable length from a switch to an attached device cannot exceed 6562 feet (2 kilometers).
- Operating environment is within the ranges listed in Appendix A, "Technical Specifications."
- Clearance to front and rear panels meet these conditions:
  - Front-panel LEDs can be easily read.
  - Access to ports is sufficient for unrestricted cabling.
  - Rear-panel AC power connector is within reach of an AC power outlet.
- Airflow around the switch and through the vents is unrestricted.
- Temperature around the unit does not exceed 113°F (45°C).

Note If the switch is installed in a closed area, such as a wiring closet, the temperature around it might be greater than normal room temperature.

- Cabling is away from sources of electrical noise, such as radios, power lines, and fluorescent lighting fixtures.

Verifying Package Contents

Note Carefully remove the contents from the shipping container, and check each item for damage. If any item is missing or damaged, contact your Cisco representative or reseller for support. Return all packing materials to the shipping container and save them.

The switch is shipped with these items:

- AC power cord
- Mounting kit containing these items:
  - Four rubber feet for installing the switch on a desktop
  - Three number-8 Phillips pan-head screws for mounting the switch on or under a desk or on a wall
  - Screw template for aligning screws
  - Magnet for mounting the switch on a metal surface
- One RJ-45-to-DB-9 adapter (console port) cable
- *Catalyst 2940 Switch Getting Started Guide* (order number DOC-7816576=)

- *Regulatory Compliance and Safety Information for the Catalyst 2940 Switch* (order number DOC-7816656=)
- Product ownership registration card

If you want to connect a terminal to the switch console port, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco.

You can connect a 100BASE-FX port to an SC port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table 2-1. Use the Cisco part numbers in Table 2-1 to order the patch cables that you need.

Table 2-1 MT-RJ Patch Cables for 100BASE-FX Connections

Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

Verifying Switch Operation

Before installing the switch, you should power on the switch and verify that it passes POST as described in the getting started guide.

The System LED turns amber if the POST fails. If the POST fails, see Chapter 3, “Troubleshooting,” to determine a course of action.

Installing the Switch

You can install the switch on or under a desk or on a wall. Before you begin the installation, decide where to mount the switch by reviewing the illustrations in these sections:

- "Installing the Switch on a Desk (Without Mounting Screws)" section on page 2-5
- "Installing the Switch on a Desk (With Mounting Screws)" section on page 2-5
- "Installing the Switch Under a Desk" section on page 2-7
- "Installing the Switch on a Wall" section on page 2-9
- "Installing the Switch (Magnet Mount)" section on page 2-12

Installing the Switch on a Desk (Without Mounting Screws)

The switch can be installed on top of a desk with mounting screws or just placed on the desk. If you do not want to install the switch with mounting screws, follow these steps:

Step 1 Locate the adhesive strip with the rubber feet in the accessory kit.

Step 2 Remove the four rubber feet from the adhesive strip, and attach them to the recessed areas on the bottom of the unit. This prevents the switch from sliding on the desktop.

Step 3 Place the switch on the desktop.

Installing the Switch on a Desk (With Mounting Screws)

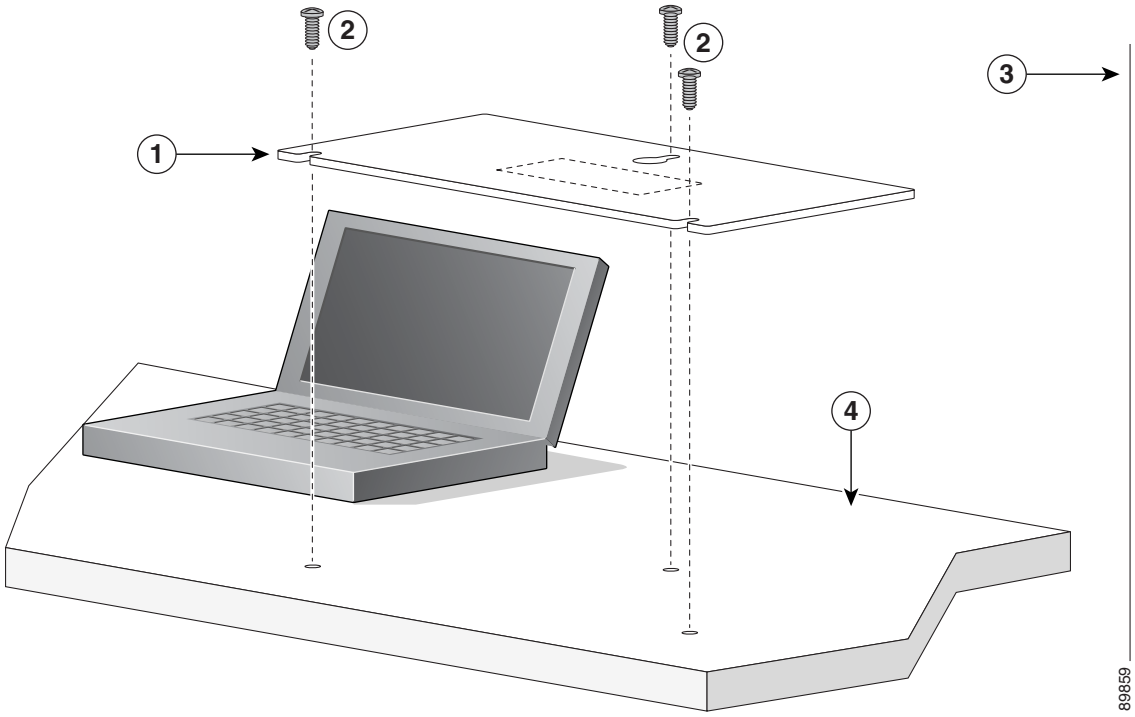
Follow these steps to secure the switch on a desk top:

Step 1 Locate the screw template. The template is used to align the mounting screw holes and is also used as a guide to make sure the screws are installed into the desktop with proper clearance.

Step 2 Position the screw template on top of the desk so that the two side-by-side slots face the *front* of the desk, as shown in Figure 2-1. This ensures that the power cord faces the *rear* of the desk after the switch is installed.

Note Do not attach the screw template to the desk yet.

Figure 2-1 Installing the Mounting Screws on Top of a Desk



1	Screw template	**3**	Wall
2	Screws	**4**	Desk

Step 3 Peel the adhesive strip off the bottom of the screw template, and attach it to the top of the desk.

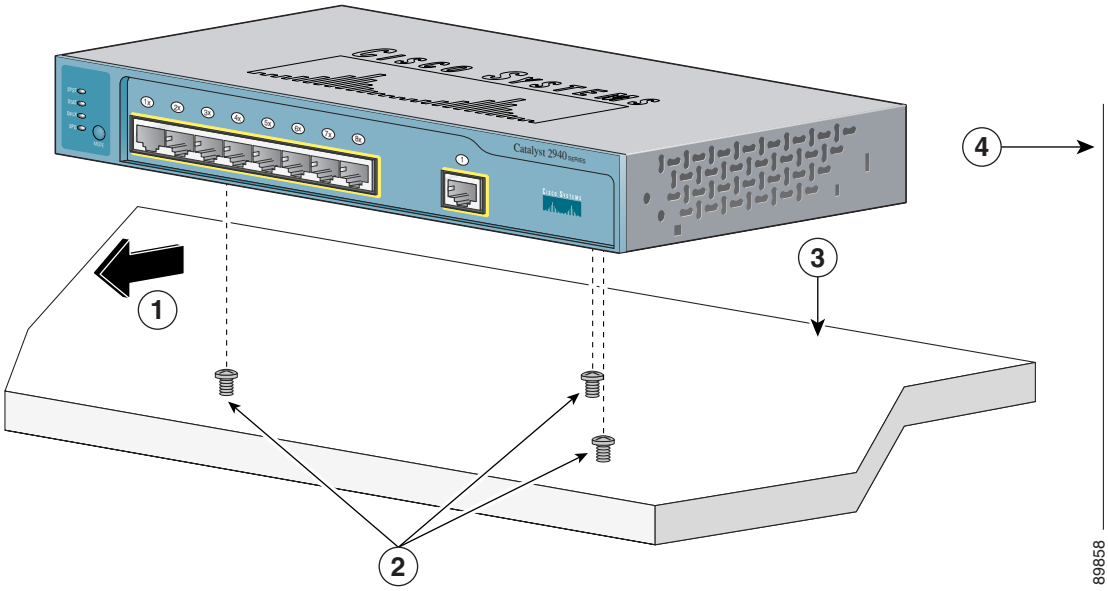
Step 4 Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2-inch (12.7 mm) hole in the two screw template slots.

Step 5 Insert three screws in the slots on the screw template, and tighten until they touch the top of the screw template.

Step 6 Remove the screw template from the desk top.

Step 7 Place the switch onto the mounting screws and slide the switch forward until it locks in place, as shown in Figure 2-2.

Figure 2-2 Mounting the Switch on Top of a Desk



1	Slides on this way	**3**	Desktop
2	Screws	**4**	Wall

Installing the Switch Under a Desk

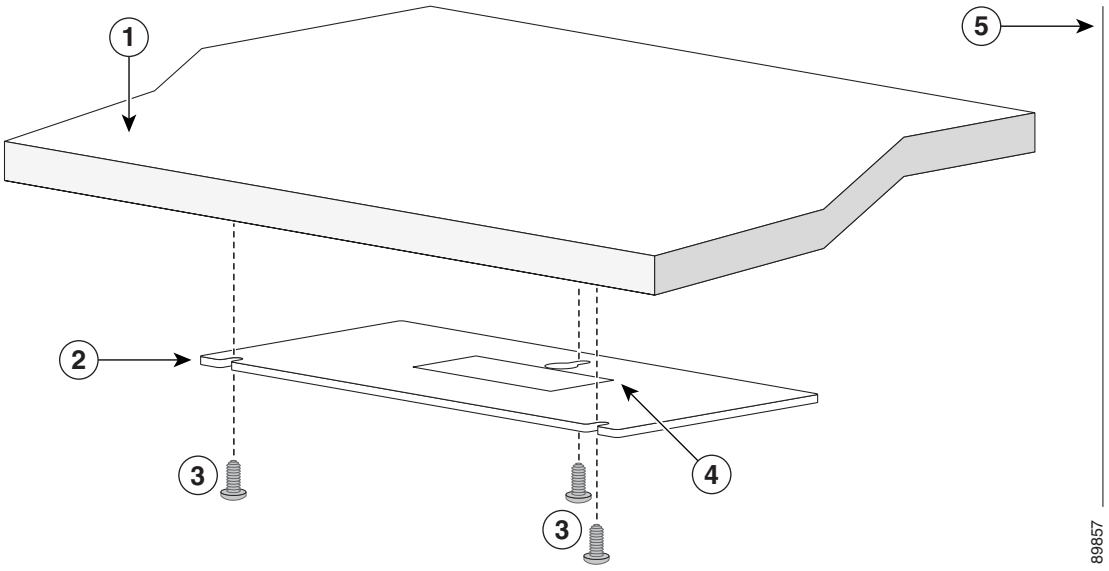
Follow these steps to install the switch under a desk:

Step 1 Locate the screw template. The template is used to align the mounting screw holes and is also used as a guide to make sure the screws are installed under the desk with proper clearance.

Step 2 Position the screw template underneath the desk so that the two side-by-side slots face the *front* of the desk, as shown in Figure 2-4. This ensures that the power cord faces the *rear* of the desk after the switch is installed.

Note Do not attach the screw template to the desk yet.

Figure 2-3 Installing the Mounting Screws Under a Desk



1	Desktop	**4**	Adhesive
2	Screw template	**5**	Wall
3	Screws		

Step 3 Peel the adhesive strip off the bottom of the screw template, and attach it to the underside of the desk.

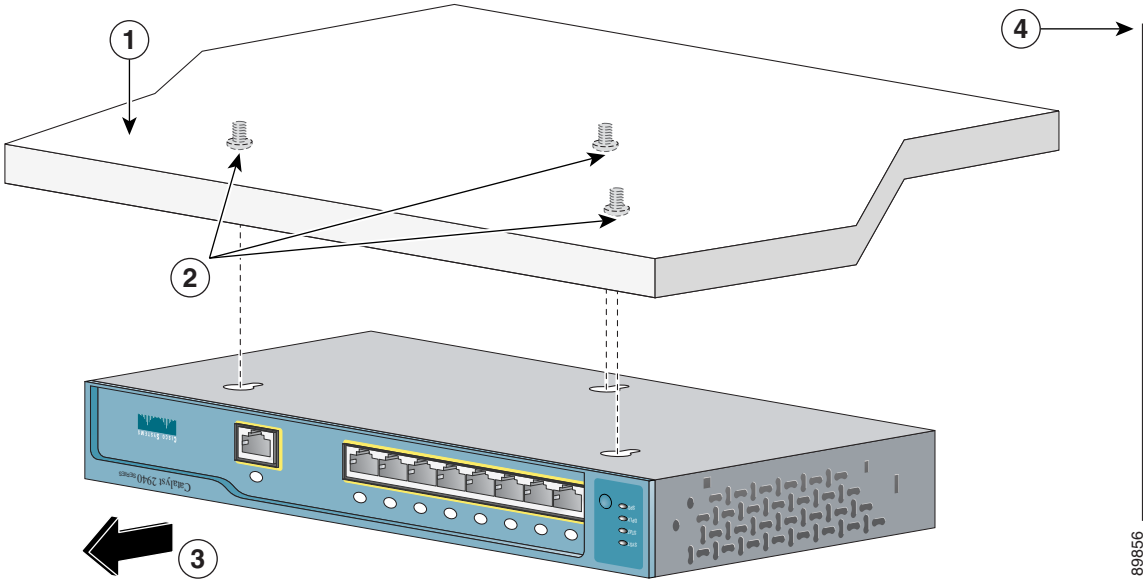
Step 4 Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2 inch (12.7 mm) hole in the two screw template slots.

Step 5 Insert three screws in the slots on the screw template, and tighten until they touch the top of the screw template.

Step 6 Remove the screw template from underneath the desk.

Step 7 Place the switch onto the mounting screws and slide the switch forward until it locks in place, as shown in Figure 2-4.

Figure 2-4 Mounting the Switch Under a Desk



1	Desktop	**3**	Slides on this way
2	Screws	**4**	Wall

Installing the Switch on a Wall

Follow the steps in this section to install the switch to a wall:

Note The switch can be wall-mounted with the front panel facing up or down. The steps in this section show how to mount the switch with the front panel facing down (as shown in Figure 2-5 on page 2-10 and Figure 2-6 on page 2-11.) If you want to mount the switch with the front panel facing up, rotate the screw template 180 degrees.

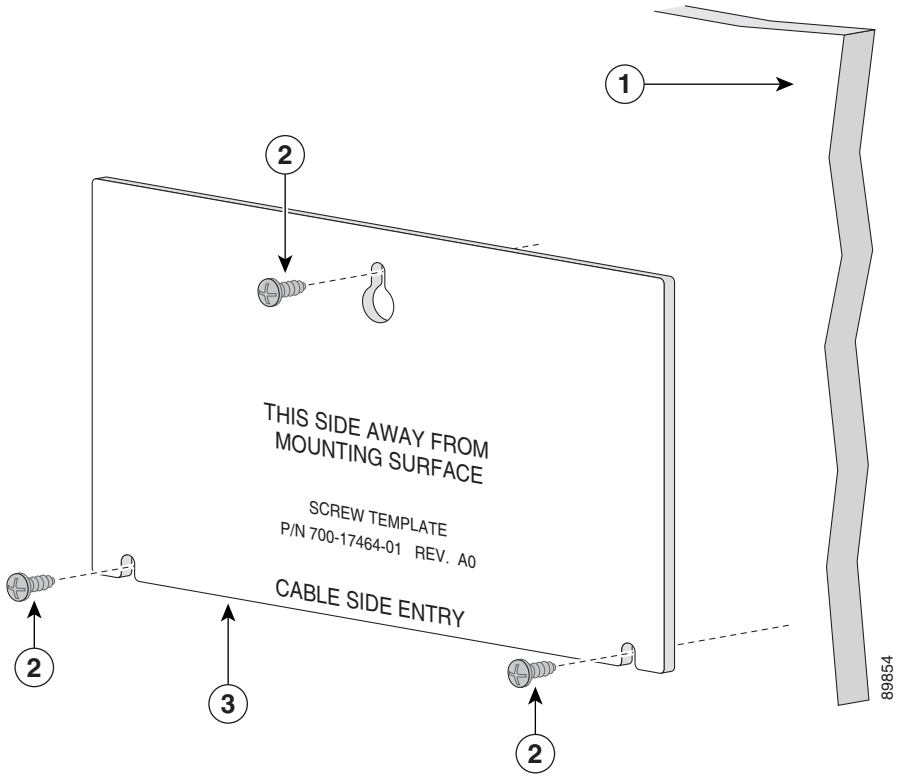
Step 1 Locate the screw template. The template is used to align the mounting screw holes.

Step 2 Position the screw template so that the two side-by-side slots face toward the ceiling, as shown in Figure 2-5. This ensures that the power cord faces toward the floor after they are connected.

For the best support of the switch and cables, make sure the switch is attached securely to a wall stud or to a firmly attached plywood mounting backboard.

Note Do not attach the screw template to the wall yet.

Figure 2-5 Installing the Mounting Screws on a Wall



1	Wall
2	Screws
3	Screw template

Step 3 Peel the adhesive strip off the bottom of the screw template.

Step 4 Attach the screw template to the wall.

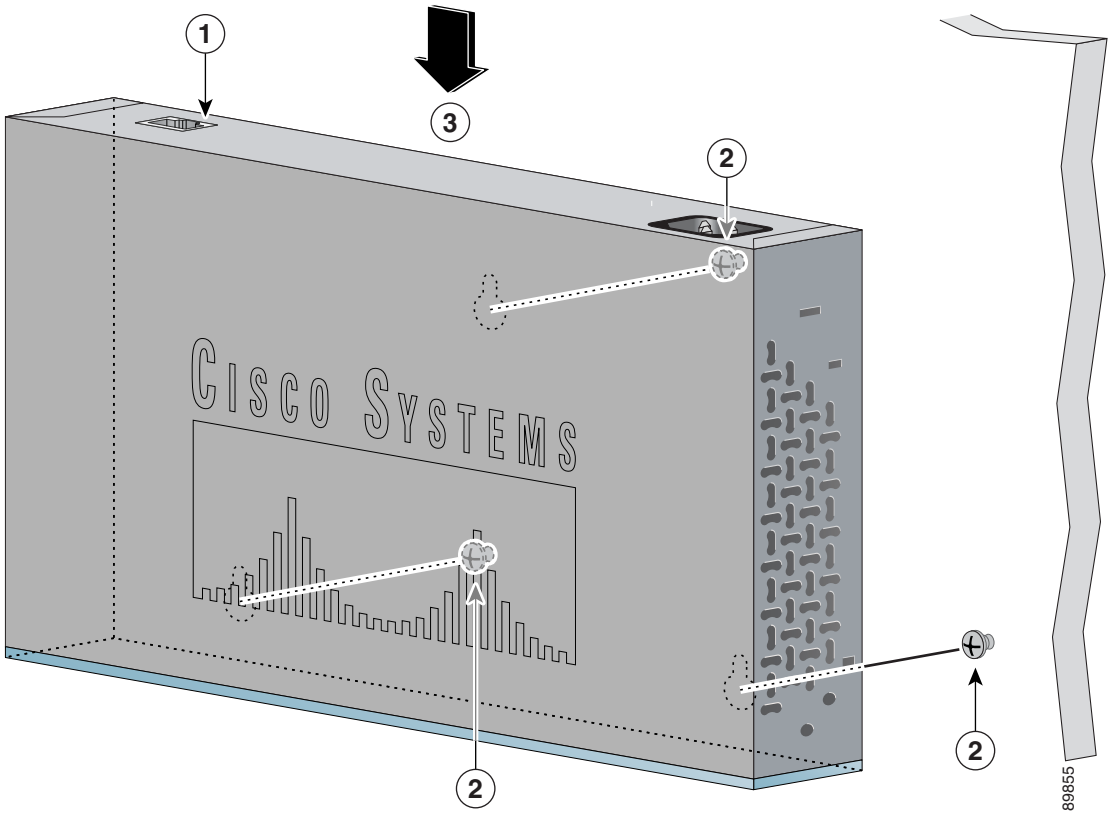
Step 5 Use a 0.144-inch (3.7 mm) or a #27 drill bit to drill a 1/2 inch (12.7 mm) hole in the three screw template slots.

Step 6 Insert three screws in the slots on the screw template, and tighten until they touch the top of the screw template.

Step 7 Remove the screw template from the wall.

Step 8 Place the switch onto the mounting screws and slide it down until it locks in place, as shown in Figure 2-6.

Figure 2-6 Installing the Switch On a Wall



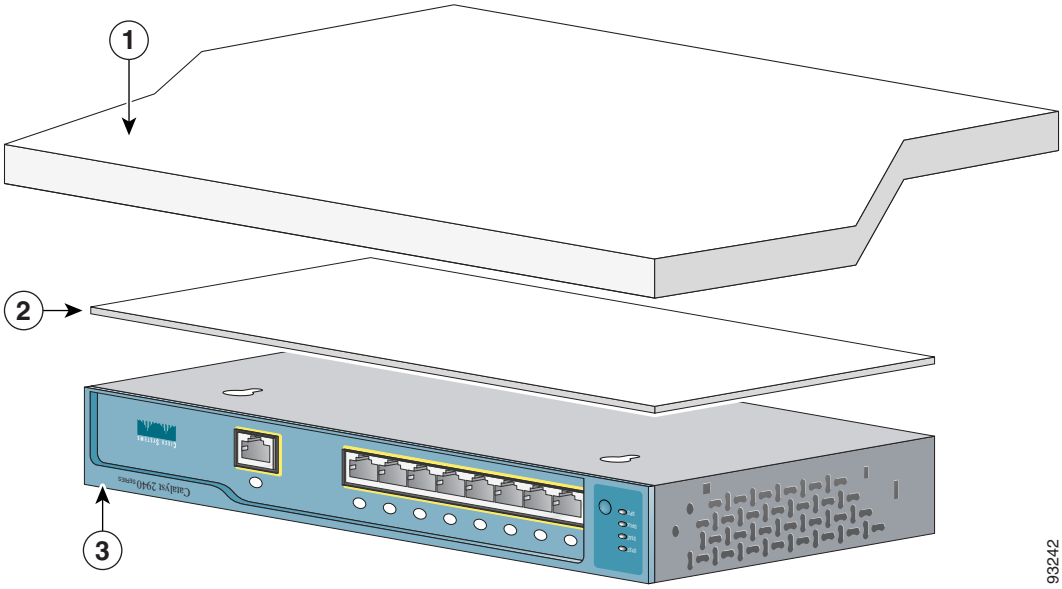
1	Switch
2	Screw
3	Slides on this way

Installing the Switch (Magnet Mount)

To mount a switch by using the magnet, follow these steps:

Step 1 Place one side of the magnet against the bottom of the switch, as shown in Figure 2-7

Figure 2-7 Mounting the Switch with a Magnet



1	Desk	**3**	Switch
2	Magnet		

Step 2 Mount the magnet and switch on a metal surface.

Connecting to an SFP Module

This section describes how to connect to an SFP module. For instructions about how to install or remove an SFP module, see the *Cisco Small Form-Factor Pluggable Modules Installation Notes* (order number DOC-7815160=) and to the documentation that came with your SFP module.

Caution Do not remove the rubber plugs from the ports on fiber-optic SFP modules or the rubber caps from the the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light.

Before connecting to an SFP module, be sure that you understand the port and cabling stipulations in Table 1-2 and in the "SFP Module Slot" section on page 1-4. See Appendix B, "Connectors and Cables," for information about the LC on the SFP modules for fiber-optic connections.

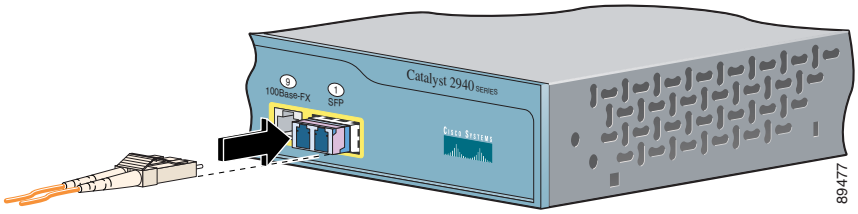
Note Refer to the release notes for the latest information about SFP modules supported by the switch.

Follow these steps to connect a fiber-optic cable to an SFP module:

Step 1 Remove the rubber plugs from the module port and fiber-optic cable, and store them for future use.

Step 2 Insert one end of the fiber-optic cable into the SFP module port, as shown in Figure 2-11)

Figure 2-8 Connecting to an SFP Module Port



Step 3 Insert the other cable end in a fiber-optic receptacle on a target device.

Step 4 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while the STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 5 If necessary, reconfigure and restart the switch or target device.

Connecting to 10/100 Ports and the 10/100/1000 Port

The 10/100 ports configure themselves to operate at the speed and duplex settings of attached devices.They operate at 10 or 100 Mbps in half- or full-duplex mode. If the attached devices do not support autonegotiation, you can explicitly set the speed and duplex parameters.

The 10/100/1000 port on the 2940-8TT-S operates at the speed setting of the attached device. This port operates in half- or full-duplex mode at 10 or 100 Mbps or in full-duplex mode only at 1000 Mbps. If the attached device does not support autonegotiation, you can set the speed.

Connecting a device that does not autonegotiate or a device with manually set speed and duplex parameters can reduce performance or result in link failures between the devices. To maximize performance, choose one of these methods for configuring the ports:

- Let the port autonegotiate both speed and duplex for 10/100 ports and only speed for 10/100/1000 ports.
- Set the speed and duplex parameters on both ends of the connection.

Caution To comply with the intrabuilding lightning surge requirements, intrabuilding wiring must be shielded, and the shield for the wiring must be grounded at both ends.

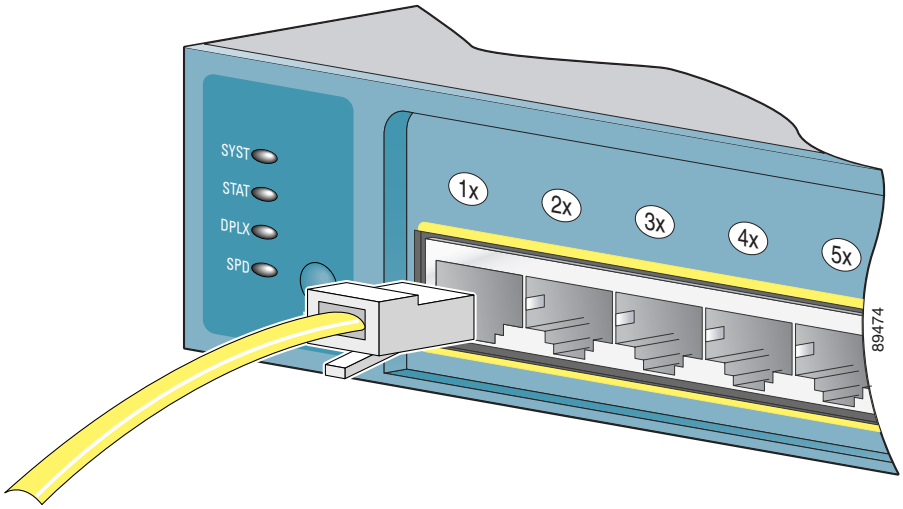
Follow these steps to connect the switch to 10BASE-T, 100BASE-TX, or 1000BASE-T devices:

Step 1 To prevent electrostatic-discharge (ESD) damage, follow your normal board and component handling procedures.

When connecting to servers, workstations, and routers, insert a twisted-pair straight-through cable in a front-panel RJ-45 connector, as shown in Figure 2-9. When connecting to switches or repeaters, insert a twisted-pair crossover cable. See the "Cable and Adapter Specifications" section on page B-5 for cable-pinout descriptions.

Note When connecting to 1000BASE-T devices, be sure to use a four twisted-pair, Category 5 cable.

Figure 2-9 Connecting to a 10/100 Port



Step 2 Insert the other cable end into an RJ-45 connector on the target device.

Step 3 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while Spanning Tree Protocol (STP) discovers the network topology and searches for loops. This process takes about 30 seconds, and then the LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 4 Reconfigure and restart the target device if necessary.

Step 5 Repeat Steps 1 through 4 to connect each port.

Connecting to the 100BASE-FX Port

The 100BASE-FX port on the Catalyst 2940-8TF-S operates only in full-duplex mode.

You can connect a 100BASE-FX port to an SC port on another device by using one of the MT-RJ fiber-optic patch cables listed in Table 2-1 on page 2-4. Use the Cisco part numbers in Table 2-1 to order the patch cables that you need.

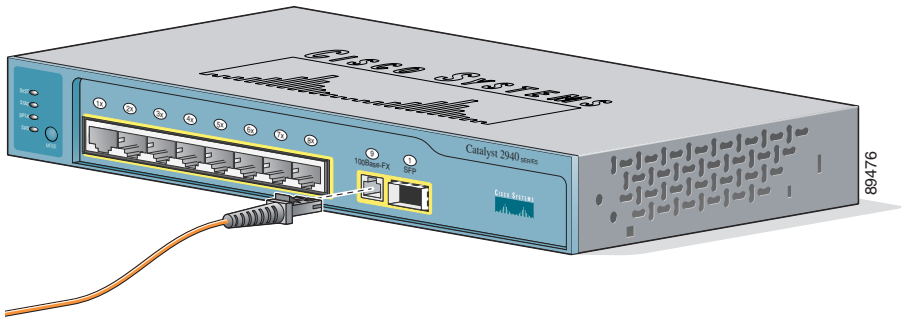
Caution Do not remove the dust plugs from the fiber-optic ports or the rubber caps from the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the fiber-optic ports and cables from contamination and ambient light.

Follow these steps to connect the switch to a 100BASE-FX device:

Step 1 Remove the dust plugs from the 100BASE-FX port and the rubber caps from the MT-RJ patch cable. Store them for future use.

Step 2 Insert the cable in a 100BASE-FX port, as shown in Figure 2-10.

Figure 2-10 Connecting to a 100BASE-FX Port



Step 3 Insert the other cable end into an SC port on the target device.

Step 4 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while Spanning Tree Protocol (STP) discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be a problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 5 Reconfigure and restart the target device if necessary.

Step 6 Repeat Steps 1 through 5 to connect each port.

Connecting to an SFP Module

This section describes how to connect to an SFP module. For instructions about how to install or remove an SFP module, see the *Cisco Small Form-Factor Pluggable Modules Installation Notes* (order number DOC-7815160=) and to the documentation that came with your SFP module.

Caution Do not remove the rubber plugs from the ports on fiber-optic SFP modules or the rubber caps from the the fiber-optic cable until you are ready to connect the cable. The plugs and caps protect the SFP module ports and cables from contamination and ambient light.

Before connecting to an SFP module, be sure that you understand the port and cabling stipulations in Table 1-2 and in the "SFP Module Slot" section on page 1-4. See Appendix B, "Connectors and Cables," for information about the LC on the SFP modules for fiber-optic connections.

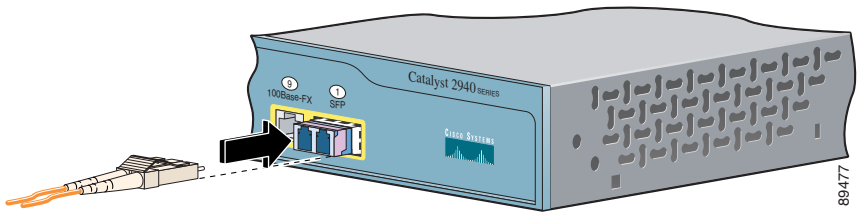
Note See the release notes for the latest information about SFP modules supported by the switch.

Follow these steps to connect a fiber-optic cable to an SFP module:

Step 1 Remove the rubber plugs from the module port and fiber-optic cable, and store them for future use.

Step 2 Insert one end of the fiber-optic cable into the SFP module port, as shown in Figure 2-11.

Figure 2-11 Connecting to an SFP Module Port



Step 3 Insert the other cable end in a fiber-optic receptacle on a target device.

Step 4 Observe the port status LED.

The LED turns green when the switch and the target device have an established link.

The LED turns amber while the STP discovers the network topology and searches for loops. This process takes about 30 seconds, and then the port LED turns green.

If the LED is off, the target device might not be turned on, there might be a cable problem, or there might be problem with the adapter installed in the target device. See Chapter 3, "Troubleshooting," for solutions to cabling problems.

Step 5 If necessary, reconfigure and restart the switch or target device.

Where to Go Next

For information about starting up the switch, see the *Catalyst 2940 Switch Getting Started Guide*.

If the default configuration is satisfactory, the switch does not need further configuration. You can use any of these management options to change the default configuration:

- Start the device manager, which is in the switch memory, to manage individual and standalone switches. This is an easy-to-use web interface that offers quick configuration and monitoring. You can access the device manager from anywhere in your network through a web browser. For more information, see the getting started guide and the device manager online help.
- Start the Network Assistant application, which is described in the *Getting Started with Cisco Network Assistant* guide. Through this GUI, you can configure and monitor a switch cluster or an individual switch.
- Use the command-line interface (CLI) from the console to configure the switch as a member of a cluster or as an individual switch. See the *Catalyst 2940 Switch Software Configuration Guide* and the *Catalyst 2940 Switch Command Reference* on Cisco.com for more information.

  For setup instructions that use the CLI, go to Appendix C, "Configuring the Switch with the CLI-Based Setup Program."
- Start an SNMP application such as the CiscoView application.

For information about configuring the switch, see the switch software configuration guide.

Troubleshooting

The front-panel LEDs provide troubleshooting information about the switch. They show power-on self-test (POST) failures, port-connectivity problems, and overall switch performance. For a full description of the LEDs, see the "LEDs" section on page 1-6.

You can also get statistics from the device manager, the Network Assistant application, the command-line interface (CLI), or a Simple Network Management Protocol (SNMP) workstation. See the switch software configuration guide, the switch command reference, or the documentation that came with your SNMP application for details.

This chapter provides these topics for troubleshooting problems:

Understanding POST Results

While the switch powers on, it automatically begins POST, a series of tests that verifies that the switch functions properly. POST lasts approximately 1 minute.

If POST passes successfully, only the SYST and STAT LEDs, as shown in Figure 1-3 on page 1-6, remain on.

If POST fails, the SYST LED turns amber. Table 3-3 on page 3-5 lists two causes and resolutions for a POST failure. POST failures are usually fatal. Contact your Cisco representative if your switch does not pass POST.

Diagnosing Common Problems

Common switch problems fall into these categories:

- Connectivity problems (Table 3-1)
- Poor performance (Table 3-2)
- Corrupted software (Table 3-3)

Table 3-1 Common Connectivity Problems and Their Solutions

Symptom	Possible Cause	Resolution
No connectivity to 10/100 ports or 10/100/1000 port.	**Incorrect or bad cable.** These are the results of no link at both ends: • Cable not properly installed between switch and PC. • A crossover cable was used when a straight-through was required, or vice-versa. • The cable is wired incorrectly. • STP is checking for possible network loops.	• Remove and reconnect cable to switch and PC. Wait 30 seconds for port status LED on switch to turn green. • To identify a crossover cable, see Figure B-12 on page B-9. • Verify that the cable is wired correctly. See Figure B-6 on page B-5 through Figure B-9 on page B-6 for the correct pinouts of 10/100 cables. For the proper application of crossover and straight-through cables, see the "Cable and Adapter Specifications" section on page B-5. • Replace it with a tested good cable. • Wait 30 seconds for port status LED to turn green.
No connectivity to 100BASE-FX port.	An SFP module was installed in the switch at power on. **Note** The SFP module slots and the 100BASE-FX port cannot both be used at the same time. If an SFP module is installed when the switch is powered on, the 100BASE-FX port is disabled.	Remove the SFP module, and reboot the switch. **Note** See the "Connecting to an SFP Module" section on page 2-12 and the Cisco *Small Form-Factor Pluggable Modules Installation Notes* (order number DOC-7815160=) for procedures on removing an SFP module.

Table 3-1 Common Connectivity Problems and Their Solutions (continued)

Symptom	Possible Cause	Resolution
No connectivity to SFP module.	• The SFP module was installed after the switch was powered on. **Note** By default, the 100BASE-FX port is enabled and the SFP module slot is disabled if an SFP module is not already installed when the switch is powered on.	• Remove and reinstall the SFP module, and reboot the switch. **Note** See the "Connecting to an SFP Module" section on page 2-12 and the Cisco *Small Form-Factor Pluggable Modules Installation Notes* (order number DOC-7815160=) for procedures on removing an SFP module.
	• A 100BASE-FX device is connected to the switch.	• Remove the connection to the 100BASE-FX device, reinstall the SFP module, and reboot the switch.
Switch placed in error-disabled state after SFP module is inserted.	Bad or non-Cisco-approved SFP module.	Remove SFP module from the switch, and replace it with a Cisco-approved module. Use the **errdisable recovery cause gbic-invalid** global configuration command to verify port status, and enter a time interval to recover from the error-disable state. See the command reference for information about the **errdisable recovery** command.

Table 3-2 Poor Performance Problems and Their Solutions

Symptom	Possible Cause	Resolution
Poor performance or excessive errors.	Duplex autonegotiation mismatch.	See the switch software configuration guide for information about identifying autonegotiation mismatches.
	Cabling distance exceeded.	
	• Port statistics show excessive frame check sequence (FCS), late-collision, or alignment errors.	• See the switch software configuration guide for information about displaying port statistics.
	• For 10BASE-T, 100BASE-TX, and 1000BASE-T connections:	
	– The distance between the port and the attached device exceeds 328 feet (100 meters).	• Reduce cable length to within the recommended distances.
	– If the switch is attached to a repeater, the total distance between the two end stations exceeds the cabling guidelines.	• See your repeater documentation for cabling guidelines.
	• For SFP module connections: The distance between the SFP module and the attached device exceeds the SFP cabling guidelines.	• See Table 1-3 for cabling guidelines.
	Bad adapter in attached device.	
	• Excessive errors found in port statistics.	• Run adapter card diagnostic utility.
	• Spanning Tree Protocol (STP) is checking for possible loops.	• Wait 30 seconds for port status LED to turn green.

Table 3-3 Corrupted Software Problems and Their Solutions

Symptom	Possible Cause	Resolution
System LED is amber, and all port LEDs are off.	Corrupted software.	Attach a monitor to the serial port to display the switch boot loader. For more information, see the switch software configuration guide.
System LED is amber.	Nonfatal or fatal POST error detected.	Use the **show post** privileged EXEC command to see which POST test failed. POST failures are usually fatal. Contact your Cisco representative if your switch does not pass POST.

Technical Specifications

Table A-1 through Table A-3 list the technical specifications for the Catalyst 2940 switches.

Table A-1 Technical Specifications for Catalyst 2940 Switches

Environmental Ranges	
Operating temperature	32 to 113° F (0 to 45° C)
Storage temperature	–13 to 158° F (–25 to 70° C)
Operating humidity	10 to 85% (noncondensing)
Operating altitude	Up to 10,000 ft (3000 m)
Storage altitude	Up to 15,000 ft (4570 m)
Power Requirements	
AC input voltage	100 to 240 VAC, 50 to 60 Hz
Power consumption	15 W (maximum) 50 Btus per hour
Physical Dimensions	
Weight	3 lb (1.36 kg)
Dimensions (H x W x D)	1.55 x 10.6 x 6.42 in. (3.94 x 26.92 x 16.3 cm)

Table A-2 Fiber-Optic Port Specifications for Catalyst 2950-8TF-Switch

Fiber-Port Power Levels	100BASE-FX port	SFP module slot[1]
Optical transmitter wavelength	1300 nm[2]	—
Optical receiver sensitivity for 50/125-micron cabling	–33.5 to –11.8 dBm[3]	—
Optical receiver sensitivity for 62.5/125-micron cabling	–33.5 to –11.8 dBm	—
Optical transmitter power for 50/125-micron cabling	–23.5 to –14 dBm	—
Optical transmitter power for 62.5/125-micron cabling	–20 to –14 dBm	—

1. SFP-dependent
2. nm = nanometers
3. dBm = decibel milliwatt

Table A-3 Catalyst 2940 Switch Agency Approvals

Safety	EMC
UL/CSA 60950	FCC Part 15 Class A
IEC 60950/EN 60950	EN 55022: 1998 (CISPR22) Class A
AS/NZS 60950	EN 55024: 1998 (CISPR24)
CE	VCCI Class A
	AS/NZS 3548 Class A
	CE
	CNS 13438 Class A
	MIC
	CLEI code
	USA CFR47, FCC, Part 15, Class A
	ICES-003, Class A
	EN55022/CISPR22, Class A, 1998
Safety	**EMC**
	EN 55024: ITE Immunity Standard. (CE Mark), 1998
	EN61000-4-2/IEC1000-4-2: Immunity to ESD
	EN61000-4-3/IEC1000-4-3: Immunity to Radio Frequency Electromagnetic Fields
	EN61000-4-4/IEC1000-4-4: Immunity to Electrical Fast Transients
	EN61000-4-5/IEC1000-4-5: Immunity to Power Line Transients (Surges)
	EN61000-4-6/IEC1000-4-6: Immunity to Radio Frequency Induced Conducted Disturbances

Table A-3 Catalyst 2940 Switch Agency Approvals (continued)

	EN61000-4-11/IEC1000-4-11: Immunity to Voltage Dips, Voltage Variations, and Short Voltage Interruptions
	AS/NZS 3548, Class A
	BSMI, Class A
	VCCI, Class A
	MIC Mark

Connectors and Cables

This appendix describes the connectors, cables, and adapters that you use to connect the switch to other devices.

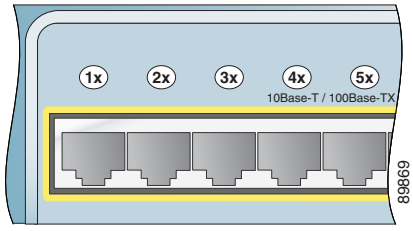
Connector Specifications

These sections describe the connectors used with the Catalyst 2940 switches and contains this information:

10/100 Ports

The 10/100 Ethernet ports use standard RJ-45 connectors and Ethernet pinouts with internal crossovers, as shown by an **X** in the port label on the switch, as shown in Figure B-1.

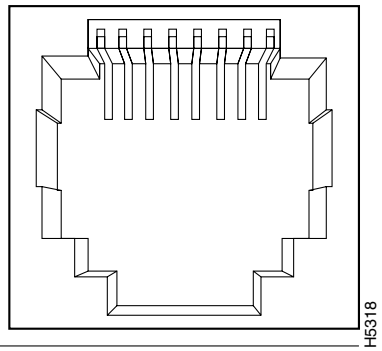
Figure B-1 Port Labels Showing Internal Crossovers



These ports have the transmit (TD) and receive (RD) signals internally crossed so that a twisted-pair straight-through cable and adapter can be attached to the port. Figure B-2 shows the pinout.

Figure B-2 10/100 RJ-45 Pinouts

Pin	Label
1	RD+
2	RD-
3	TD+
4	NC
5	NC
6	TD-
7	NC
8	NC



When connecting 10/100 ports to other devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and 100BASE-TX. Figure B-6 shows the two twisted-pair, straight-through cable schematics. Figure B-8 shows the four twisted-pair, straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. Figure B-7 shows the two twisted-pair, crossover cable schematics. Figure B-9 shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T devices. You must use Category 5 cabling when connecting to 100BASE-TX devices.

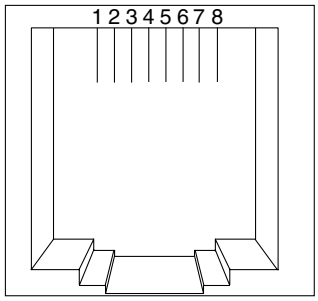
Note Use a straight-through cable to connect two ports only when one port is designated with an **X**. Use a crossover cable to connect two ports when both ports are designated with an **X** or when both ports do not have an **X**.

10/100/1000 Ports

The 10/100/1000 Ethernet port on the Catalyst 2940-8TT-S switch uses a standard RJ-45 connector. Figure B-3 shows the pinout.

Figure B-3 RJ-45 Pinouts for 10/100/1000 Port

Pin	Label
1	TP0+
2	TP0-
3	TP1+
4	TP2+
5	TP2-
6	TP1-
7	TP3+
8	TP3-



34751

Connecting to 10BASE-T and 100BASE-TX Devices

When connecting the ports to 10BASE-T and 100BASE-TX devices, such as servers, workstations, and routers, you can use a two or four twisted-pair, straight-through cable wired for 10BASE-T and100BASE-TX. Figure B-6 shows the two twisted-pair, straight-through cable schematics. Figure B-8 shows the four twisted-pair, straight-through cable schematics.

When connecting the ports to 10BASE-T- and 100BASE-TX devices, such as switches or repeaters, you can use a two or four twisted-pair, crossover cable. Figure B-7 shows the two twisted-pair, crossover cable schematics. Figure B-9 shows the four twisted-pair, crossover cable schematics.

You can use Category 3, 4, or 5 cabling when connecting to 10BASE-T devices. You must use Category 5 cabling when connecting to 100BASE-TX devices.

Connecting to 1000BASE-T Devices

When connecting the ports to 1000BASE-T devices, such as servers, workstations, and routers, you must use a four twisted-pair, Category 5, straight-through cable wired for 10BASE-T, 100BASE-TX, and 1000BASE-T. Figure B-10 shows the straight-through cable schematics.

When connecting the ports to other devices, such as switches or repeaters, you must use a four twisted-pair, Category 5, crossover cable. Figure B-11 shows the crossover cable schematics.

Note Be sure to use a four twisted-pair, Category 5 cable when connecting to a 1000BASE-T device.

Note Use a straight-through cable to connect two ports only when one port is designated with an **X**. Use a crossover cable to connect two ports when both ports are designated with an **X** or when both ports do not have an **X**.

100BASE-FX Port

The 100BASE-FX port on the Catalyst 2940 8TF-S uses an MT-RJ connector, shown in Figure B-4. This port uses 50/125- or 62.5/125-micron multimode fiber-optic cabling.

You can connect a 100BASE-FX port to an SC port on a target device by using one of the MT-RJ fiber-optic patch cables listed in Table B-1. Use the Cisco part numbers in Table B-1 to order the patch cables that you need.

Figure B-4 MT-RJ Connector

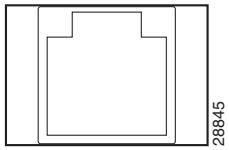


Table B-1 MT-RJ Patch Cables for 100BASE-FX Connections

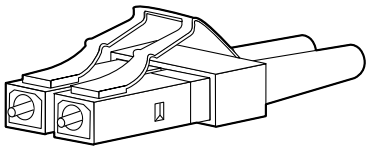
Type	Cisco Part Number
1-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-1M
3-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-3M
5-meter, MT-RJ-to-SC multimode cable	CAB-MTRJ-SC-MM-5M
1-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-1M
3-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-3M
5-meter, MT-RJ-to-ST multimode cable	CAB-MTRJ-ST-MM-5M

SFP Module Slot

The Catalyst 2940-8TF-S switch has a slot for SFP modules that provide fiber-optic uplink ports.

Figure B-5 shows an SFP module connector for a fiber-optic connection.

Figure B-5 SFP Module Connector



Warning **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 1051

Warning **Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.** Statement 272

Console Port

The console port uses an 8-pin RJ-45 connector. You can connect a switch to a PC through the console port and the supplied RJ-45-to-DB-9 adapter cable. If you want to connect a switch to a terminal, you need to provide an RJ-45-to-DB-25 female DTE adapter. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco. For console-port and adapter-pinout information, see Table B-2 and Table B-3.

Cable and Adapter Specifications

These sections describe the cables and adapters used with Catalyst 2940 switches.

Two Twisted-Pair Cable Pinouts

Figure B-6 and Figure B-7 show the schematics of two twisted-pair cables for 10/100 ports.

Figure B-6 Two Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports

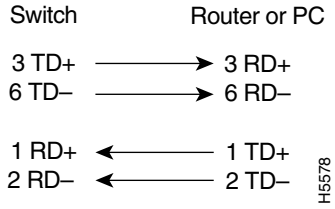
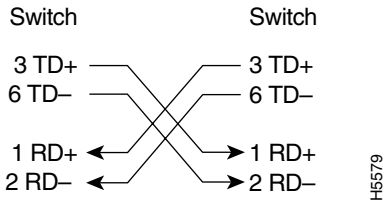


Figure B-7 Two Twisted-Pair Crossover Cable Schematic for 10/100 Ports



Four Twisted-Pair Cable Pinouts for 10/100 Ports

Figure B-8 and Figure B-9 show the schematics of four twisted-pair cables for 10/100 ports.

Figure B-8 Four Twisted-Pair Straight-Through Cable Schematic for 10/100 Ports

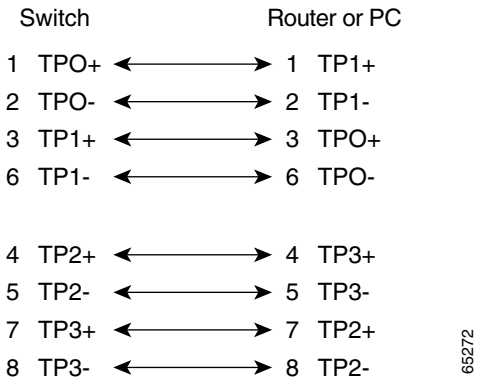
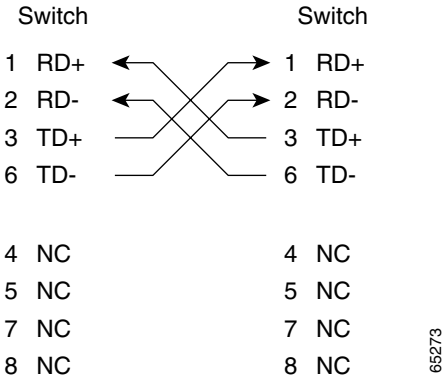


Figure B-9 Four Twisted-Pair Crossover Cable Schematic for 10/100 Ports



Four Twisted-Pair Cable Pinouts for 1000BASE-T Ports

Figure B-10 and Figure B-11 show the schematics of four twisted-pair cables for the 10/100/1000 port.

Figure B-10 Four Twisted-Pair Straight-Through Cable Schematic for 10/100/1000 and 1000BASE-T GBIC Module Ports

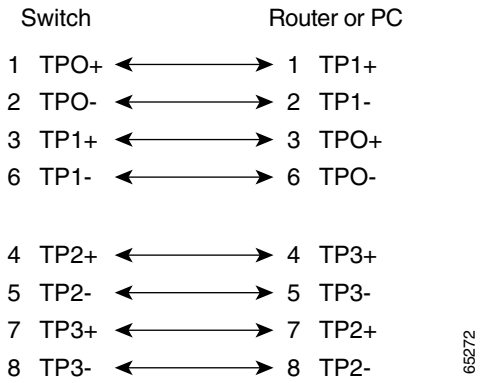
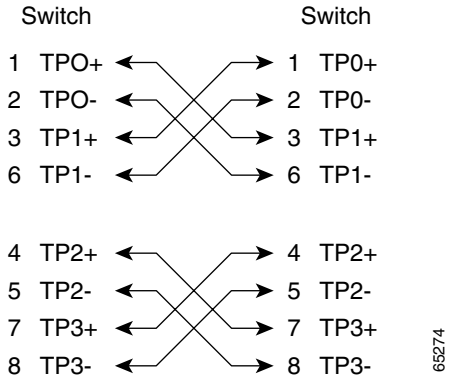


Figure B-11 Four Twisted-Pair Crossover Cable Schematics for 10/100/1000 and 1000BASE-T GBIC Module Ports



Cable and Adapter Pinouts

This section describes the cable and adapter pinouts and also describes how to identify a rollover cable.

Connecting to a PC

Use the supplied RJ-45-to-DB-9 adapter cable to connect the console port to a PC running terminal-emulation software. Table B-2 lists the pinouts for the console port and the RJ-45-to-DB-9 adapter cable.

Table B-2 Console Port Signaling and RJ-45-to-DB-9 Adapter Cabling

Console Port (DTE)	RJ-45-to-DB-9 Adapter Cable		Console Device
Signal	**RJ-45 Pin**	**DB-9 Pin**	**Signal**
RTS	1	8	CTS
Not connected	2	6	DSR
TxD	3	2	RxD
GND	4	5	GND
GND	5	5	GND
RxD	6	3	TxD
Not connected	7	4	DTR
CTS	8	7	RTS

Connecting to a Terminal

Use the supplied RJ-45-to-DB-9 adapter cable and an RJ-45-to-DB-25 female DTE adapter to connect the console port to a terminal. Table B-3 lists the pinouts for the console port, the adapter cable, and the RJ-45-to-DB-25 adapter.

Note The RJ-45-to-DB-25 female DTE adapter is not supplied with the switch. You can order a kit (part number ACS-DSBUASYN=) with that adapter from Cisco.

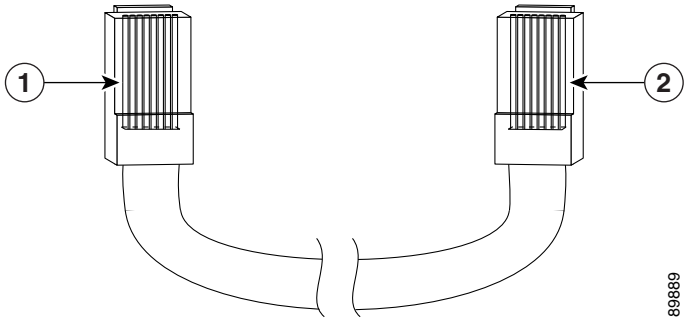
Table B-3 Console Port Signaling and Cabling Using a DB-25 Adapter

Console Port (DTE)	RJ-45-to-DB-9 Adapter Cable		RJ-45-to-DB-25 Terminal Adapter	Console Device
Signal	**RJ-45 Pin**	**DB-9 Pin**	**DB-25 Pin**	**Signal**
RTS	1	8	5	CTS
Not connected	2	6	6	DSR
TxD	3	2	3	RxD
GND	4	5	7	GND
GND	5	5	7	GND
RxD	6	3	2	TxD
Not connected	7	4	20	DTR
CTS	8	7	4	RTS

Identifying a Rollover Cable

You can identify a rollover cable, also known as a "crossover" cable, by comparing the two modular cable ends. Hold the cable ends side-by-side, with the tab at the back, right plug, as shown in Figure B-12.

Figure B-12 Identifying a Rollover Cable



1	Pin 1
2	Pin 9

On a rollover cable, the wire connected to the pin on the outside of the left plug should be the same color as the wire connected to the pin on the outside of the right plug.

Configuring the Switch with the CLI-Based Setup Program

This appendix provides a command-line interface (CLI)-based setup procedure for a standalone switch. This chapter contains these sections:

Methods for Accessing the CLI

You can access the CLI by these methods:

Accessing the CLI Through Express Setup (Unconfigured Switch Only)

You can access the CLI on an unconfigured switch by placing the switch in Express Setup mode and then connecting an Ethernet port of the switch to the Ethernet port of your PC or workstation. To put the switch into Express Setup mode, follow the steps described in the getting started guide.

After the switch is in Express Setup mode, telnet to the switch by using the IP address **10.0.0.1,** and enter the **setup** user EXEC command. See these sections in this chapter to then configure the switch by using the CLI:

After you have entered the configuration information for the switch, save it to flash memory by using the **write memory** privileged EXEC command.

Note While in Express Setup mode, the IP address **10.0.0.1** remains active on the switch until you enter the **write memory** command. You lose the Telnet connection after entering the **write memory** command.

For more information about using the CLI, see the command reference for this release.

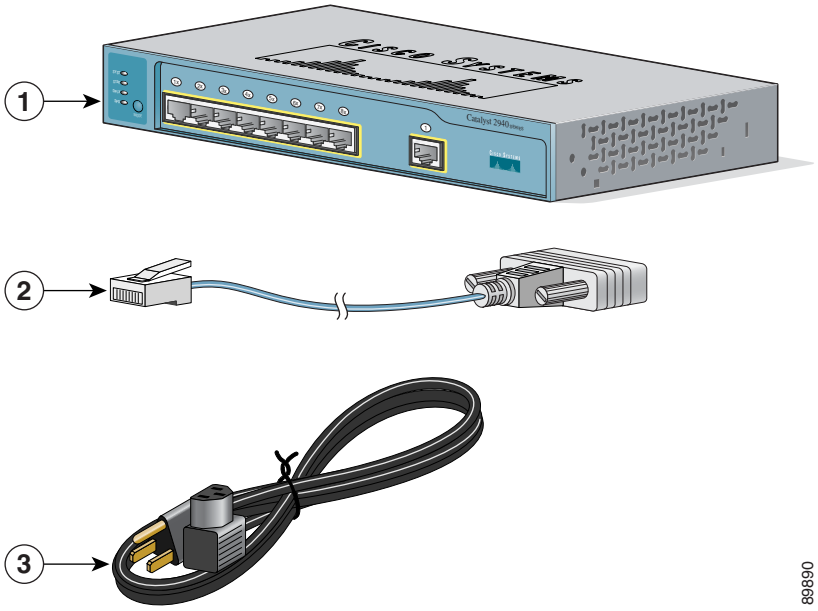
Accessing the CLI Through the Console Port

You can access the CLI by connecting the console port of the switch to the serial port on your PC or workstation and access the switch through a Telnet session. To access the switch through the console port, follow the steps in the rest of this chapter, beginning with the "Taking Out What You Need" section on page C-2.

Taking Out What You Need

Remove the items from the shipping container, as shown in Figure C-1.

Figure C-1 Catalyst 2940 Switch, Console Cable, and AC Power Cord



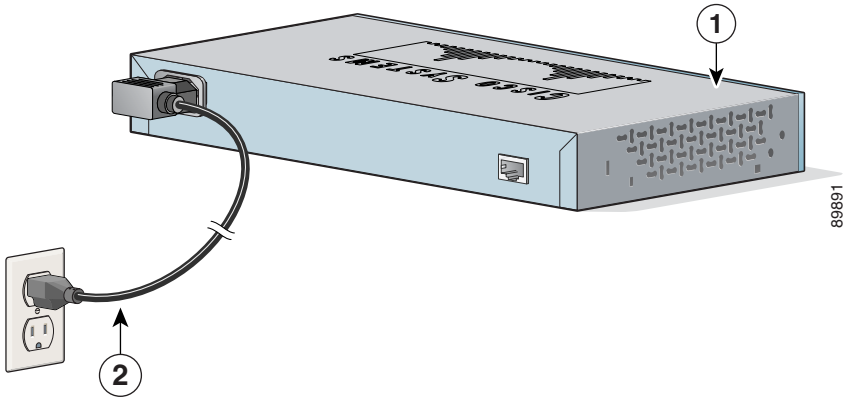
1	Switch	**3**	AC power cord
2	Console cable		

Connecting to a Power Source

Follow these steps to connect to a power source:

Step 1 Connect one end of the supplied AC power cord to the power connector on the switch rear panel, as shown in Figure C-2.

Figure C-2 Connecting Switch to AC Power



1	Switch
2	AC power cord

Step 2 Connect the other end of the power cable to a grounded AC outlet.

As the switch powers on, it begins the power-on self-test (POST), a series of tests that run automatically to ensure that the switch functions properly. If POST fails, see Chapter 3, "Troubleshooting," to determine a course of action.

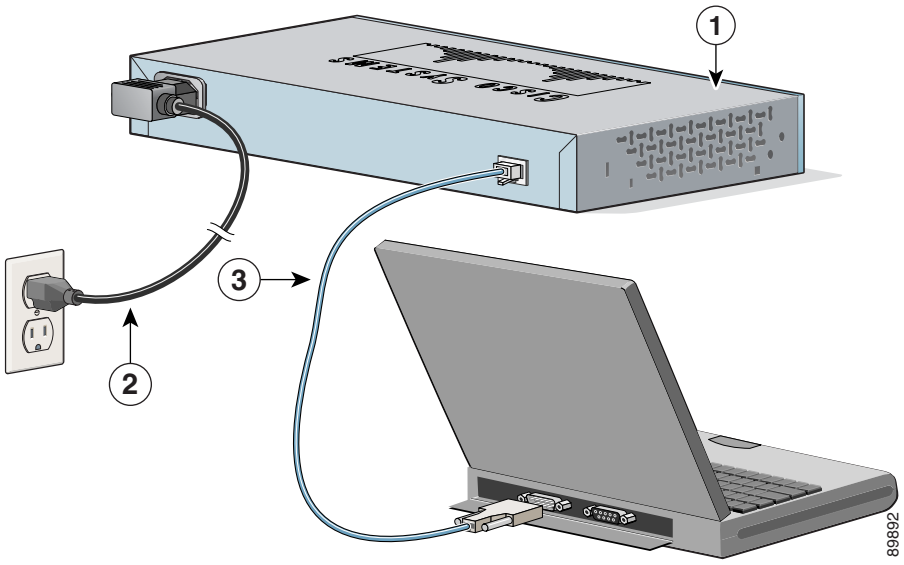
Connecting to the Console Port

You can use the console port to perform the initial configuration. To connect the switch console port to a PC, use the supplied RJ-45-to-DB-9 adapter cable.

Follow these steps to connect the PC or terminal to the switch:

Step 1 Using the supplied RJ-45-to-DB-9 adapter cable, insert the RJ-45 connector into the console port on the rear of a switch, as shown in Figure C-3.

Figure C-3 Connecting a Switch to a PC



1	Switch	**3**	RJ-45-to-DB-9 adapter (console) cable
2	AC power cord		

Step 2 Attach the DB-9 female DTE of the adapter cable to the serial port of a PC, or attach an appropriate adapter to the terminal.

Starting the Terminal Emulation Software

Before you connect to and power on the switch, start the terminal-emulation session so that you can see the output display from the POST.

The terminal-emulation software—frequently a PC application such as Hyperterminal or ProcommPlus—makes communication between the switch and your PC or terminal possible.

Note If you started the terminal-emulation program before you powered on your switch, the PC or terminal displays the bootloader sequence. You need to press **Enter** to display the setup program prompt.

Follow these steps to start a terminal-emulation session:

Step 1 Launch your terminal-emulation program if you are using a PC or terminal.

Step 2 Begin a terminal-emulation session.

Step 3 Configure the baud rate and character format of the PC or terminal to match these console port default characteristics:

- 9600 baud
- 8 data bits
- 1 stop bit
- No parity
- None (flow control)

Step 4 Press the **Enter** key. This prompt appears:

```
Switch>
```

Entering the Initial Configuration Information

To set up the switch, you need to complete the setup program, which runs automatically after the switch is powered up. You must assign an IP address and other configuration information necessary for the switch to communicate with the local routers and the Internet. This information is also required if you plan to use the Network Assistant to configure and manage the switch.

IP Settings

You will need this information from your network administrator before you complete the setup program:

- Switch IP address
- Subnet mask (IP netmask)
- Default gateway (router)
- Enable secret password
- Enable password
- Telnet password

Completing the Setup Program

Follow these steps to complete the setup program and to create an initial configuration for the switch:

Step 1 Enter **Yes** at these two prompts.

```
Would you like to enter the initial configuration dialog? [yes/no]: yes

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.

Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system.

Would you like to enter basic management setup? [yes/no]: yes
```

Step 2 Enter a host name for the switch, and press **Return**.

On a command switch, the host name is limited to 28 characters; on a member switch to 31 characters. Do not use *-n*, where n is a number, as the last character in a host name for any switch.

```
Enter host name [Switch]: host_name
```

Step 3 Enter an enable secret password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, can start with a number, is case sensitive, allows spaces, but ignores leading spaces. The secret password is encrypted, and the enable password is in plain text.

```
Enter enable secret: secret_password
```

Step 4 Enter an enable password, and press **Return**.

```
Enter enable password: enable_password
```

Step 5 Enter a virtual terminal (Telnet) password, and press **Return**.

The password can be from 1 to 25 alphanumeric characters, is case sensitive, allows spaces, but ignores leading spaces.

```
Enter virtual terminal password: terminal-password
```

Step 6 (Optional) Configure Simple Network Management Protocol (SNMP) by responding to the prompts. You can also configure SNMP later through the CLI, the device manager, or the Network Assistant application. To configure SNMP later, enter **no**.

```
Configure SNMP Network Management? [no]: no
```

Step 7 Enter the interface name (physical interface or VLAN name) of the interface that connects to the management network, and press **Return**. For this release, always use **vlan1** as that interface.

```
Enter interface name used to connect to the
management network from the above interface summary: vlan1
```

Step 8 Configure the interface by entering the switch IP address and subnet mask and pressing **Return**. These IP address and subnet masks shown are examples.

```
Configuring interface vlan1:
Configure IP on this interface? [yes]: yes
IP address for this interface: 10.4.120.106
Subnet mask for this interface [255.0.0.0]: 255.0.0.0
```

Step 9 Enter **Y** to configure the switch as the cluster command switch. Enter **N** to configure it as a member switch or as a standalone switch.

If you enter **N**, the switch appears as a candidate switch in the Network Assistant GUI. You can later configure the switch as a command switch through the CLI or Network Assistant interface. To configure it later, enter **no**.

```
Would you like to enable as a cluster command switch? [yes/no]: no
```

You have now completed the initial configuration of the switch and the switch displays its initial configuration. This is an example of that output:

```
The following configuration command script was created:
hostname host_name
enable secret 5 $1$Max7$Qgr9eXBhtcBJw3KK7bc850
enable password my
line vty 0 15
password my_password
snmp-server community public
!
no ip routing
!
interface Vlan1
no shutdown
ip address 172.20.139.145 255.255.255.224
!
interface Vlan2
shutdown
no ip address
!
interface FastEthernet0/1
!
interface FastEthernet0/2
!
...<output abbreviated>
!!!
interface GigabitEthernet0/1
!
end
```

Step 10 These choices appear:

```
[0] Go to the IOS command prompt without saving this config.

[1] Return back to the setup without saving this config.

[2] Save this configuration to nvram and exit.

If you want to save the configuration and use it the next time the switch reboots, save it
in nonvolatile RAM (NVRAM) by selecting option 2.

Enter your selection [2]:2
```

Make your selection, and press **Return**.

Where to Go Next

After you complete the setup program, the switch can run the default configuration that you created.

- For product overview information, see Chapter 1, "Overview."
- For detailed installation procedures on mounting your switch on or under a desk or on a wall, or connecting to the small form-factor pluggable (SFP) modules, see Chapter 2, "Installation." To complete this setup procedure, your PC must not be configured with a fixed IP address.

If you want to change the configuration or want to perform other management tasks, use one of these tools:

- CLI
- Device manager from your browser (for one switch)
- Network Assistant (for one or more switches)

To use the CLI, enter commands at the *Switch*> prompt through the console port by using a terminal-emulation program or through the network by using a telnet session. For configuration information, see the switch software configuration guide or the switch command reference.

To use the Network Assistant, see the *Getting Started with Cisco Network Assistant* guide.

Numerics

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